

AVIATION

The Oldest American Aeronautical Magazine

JANUARY 28, 1924

Issued Weekly

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A fine formation of U. S. naval fighting airplanes

VOLUME
XVI

SPECIAL FEATURES

AN INDICTMENT AND A WARNING
THE SHENANDOAH WEATHERS A STORM
REGULATIONS OF CURTISS TROPHY RACE
SWANSON-FREEMAN COMMERCIAL TWO-SEATER

NUMBER
4

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

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Training Throughout the Year

JANUARY 28, 1924

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No. 4

General Patrick's Annual Report

THIS additional and lengthy unpublished excerpt from the annual report of the Chief of Air Service which are presented in this issue are worth the most careful perusal of all those concerned with our future as an air power.

No portion of the report is perhaps more interesting than the air shooting as calculated from the amount spent on research for experimentation, and on the other for airplane production. Under the former head there stands a total of \$5,000,000, under the latter, approximately \$1,000,000, of which \$500,000 was spent on new airplanes. While several million dollars are allocated in the annual Air Service appropriation for the procurement of new airplanes and engines, \$100,000 was the amount actually spent for this purpose last year out of a total appropriation of \$2,000,000.

This fact reveals a serious situation in the Air Service, one which General Patrick incidentally emphasizes in his report in the following terms:

"While great progress has been made in the development of equipment, in the training of personnel and in the perfection of organization, it must be pointed out that these advances have in the ultimate analysis reached their zenith. No further advancement as a whole is possible under existing conditions, and on the other hand the present critical shortage of equipment and personnel portends either a period of retrogression."

In other words, the Army Air Service has pushed experimentation and research at the expense of production. In this manner it has developed more remarkable samples of service and training planes, yet its squadrons are mostly inactive in modern military aviation. This is but a natural consequence of the tendency constantly to improve the equipment. Experimentation of this sort deflates the requirements of production, for there is a very natural reluctance to place any production order if the hope is entertained that an article having a more remarkable type of plane will be available than the one just experimented with.

The figures given in the report show that in 1923, unless immediate steps are taken to remedy this condition, the Air Service will have only 280 airplanes of which 182 were "war produced," whereas there will be needed 1955 if even the present requirements are not increased. If therefore because evident that what is most seriously needed for the next few years is to replace the equipment of the Air Service with production-oriented surplus.

While no one but the Chief of Air Service can determine the relative importance of Air Service activities, it is the present policy of all enterprises, when these necessities are not available, to cut down overhead and expand some of the more necessary operating requirements.

The Shenandoah Weathers a Storm

Tom from Mooring Mast, Airship Outrides 70 mi. Gale Which Causes Havoc on Atlantic Seaboard

The U.S. Naval airship Shenandoah gave a remarkable demonstration of her remarkable qualities the night of Jan. 16-17. After being torn from her mooring mast at Lakewood naval air station by a 70 mph gale, the ship's crew of twenty-one—who were on board under the command of Lt. Cmdr. H. M. Pease, U.S.N., her navigating officer, and including Capt. Austin Heinen, the skipper, expert—drifted there by boat through the storm and safely landed back at Lakewood the next morning. The wind over the ground had by this time dropped to 50 mph, although drift it was still blowing at some 50 mph.

Force of the Storm

The force of the storm and some of its effects upon the Atlantic seaboard are graphically told on the following passage appearing in the New York World:

In this caused the death and injury to twelve persons, most saved later with shipping and due considerable property damage in New York and vicinity yesterday. Weather Bureau officials reported it one of the worst January storms in the fifteen years in which records have been kept.

With this storm hit Lakewood, the Shenandoah had been at her mooring mast for three days, being subjected to rains there for a week, but not the pressure that she would be subjected to under varying wind forces, and to give the crew training in mooring and unmooring. The mooring mast is 172 ft long and at the top has a several arrangement which fits around the nose of the ship. Gag ropes run from the end of the stump to the ground and these are attached to what amounts to a circular track. Thus the Shenandoah can swing in the wind much as a ship at anchor swings with the tide.

When the wind began to make fast, it soon drove toward the ground and drove a cable down its fairlead. This it pulled up by the ground crew and fastened to a line leading down from the top of the mast. A strong power wind then takes up the cable and drives the mast gradually down to the deck when the rope is broken by the wind.

When the shock struck Lakewood, the Shenandoah was holding her sail at the mast, riding easily, though the gale was to 50 mph by 6:30. There was a small skeleton crew on board, but soon the wind did not allow any signals of distress to be sent. Lt. Cmdr. H. M. Pease, U.S.N., commanding officer of the Shenandoah, decided to put a regular crew of twenty-two men on board for all emergencies. The crew remained of Lt. Cmdr. H. M. Pease, navigating officer, an ensign; Lieuts. J. L. Fagan, E. H. Knead and R. G. Meyer; Radio Gunner J. L. Robertson, Capt. Austin Heinen, technical adviser to the Navy Department, W. C. Burgess, of the Naval Bureau of Aeronautics, and ten enlisted men of Naval Aviation and four N.C.O.'s of the Army air service.

The New Cap Radio Out

Ten minutes after the crew had gone on board, there was a loud roar, and the Shenandoah pulled her mooring, and drifted off into the night. It appears that a particularly ferocious blast first tore out the fabric from the upper ventral fin and caused huge bulk software, just another gust except he was down. The result was a trailing storm which followed the ship. The ship was listing to starboard, was stopped every ten seconds with a section of her outer cover, and damaging her two forward compartments filled with helium gas, which were deflated as a result.

Owing to the resultant loss of lift forward, the Shenandoah drifted across the field with her nose down, until Captain Heinen, who instantly perceived her critical condition and who was present to the masthead, pulled the ballast release lever, jettisoning some 4000 lb of water ballast.

Even so, due to the speed of the wind, the ship hardly moved, and at the end of the field and three hundred yards, took off at 113 mph, subsequently, as he will be jettisoned before she nose to a safe height.

The sections—which had been warmed up every half hour at the mast—were then stopped and the Shenandoah, now being well under control despite the breakdown of her deflag cells, began raising behind the storm.

In the meantime ground observations were undertaken, as the ground for the last two hours.

The radio was disconnected while the ship was raised. Finally, at 8:30 p. m. Major Field picked up the following message from the Shenandoah: "All O.K. We're rolling out storm. Take care we are near Brunswick. Heading eastward. Verify position and send us weather information." "Parvo."

The radio was promptly reconnected by dropping all instruments and by adding all radio antennas to be on the lookout for the ship and to report her position.

The ship was then over New Jersey, crossing around to land and was now spread their forces. Governor's Island was up to guide her, and all available landmarks in New York City were playing against the sky. When the weather cleared, the Shenandoah sought her way back to Lakewood, where she arrived at 10:30 a. m. There was no damage to the ship, nor was the mooring mast dislodged, the field, where a general tree of 400 men was in residence. At 8:30 the ship was safely hoisted in her hangar.

None of the crew was injured.

Captain Heinen's Account

Captain Heinen told the story of this impromptu cruise to a newspaper as follows:



At Lakewood.

Safe and home again—None of the Shenandoah's crew suffered any injuries during the mooring cap pulled out and collapse of the mast court stripped by the storm.

January 25, 1924

AVIATION

"I do not believe," he said, "any other ship in which I have been would have successfully gone through the gale as easily like a ship slips her cable in a harbor and gets to sea to ride out bad weather. The demonstration of the ship's worthiness has been most striking, and the demonstration of the skill and ability of her officers and men is most impressive."

"From all our information, it may be asserted with positive certainty that there is hardly a possibility that this ship will encounter in her Arctic expeditions any test as severe as that she has already met successfully."

The members of the Navy congressional delegation and naval officers heard the Shenandoah in the following language:

"The Department expresses its highest commendation to Capt. Austin Heinen and his crew for their conduct and handling of the ship during the gale of Thursday night. The Department feels that it is due to their skill and seamanship that the Shenandoah has been successfully concluded through this trying test of her qualities."

The most telling commentary on the seamanship of the Shenandoah was probably that made by Dr. Burgess, of the Naval Bureau of Aeronautics, who said:

"Had you ever seen a steamer ship going to sea in a gale of 50 mph with a broken mast and pronounced seas as high as 10 feet above the deck?"

"As soon as we learned that her engine was burning over we had no cause for alarm. As far as we know, the ship weathered the severest gale any other ship has experienced at a mooring mast. We have records of rigs sailing out

Regulations of the Curtiss Trophy Race

The year's Curtis Marine Flying Trophy race (for high speed seaplanes) will be held March 5, next, in Miami, Fla., on the second day of a two-day flying meet held with N.A.C.A. sanction under F.A.I. rules.

Preliminary Events

For March 7, the first day of the meet, two events are scheduled:

The first of these is the Mixed Chamber of Commerce Cup race, a free all event for privately owned seaplanes having to seat one or more passengers. The race will be held over six laps of a triangular course of 25 km. each, making a total distance of 150 km. (93.2 mi.). The Cup will become the permanent possession of the winner, who will also receive a cash prize of \$1000. Second prize is \$800, third prize \$600.

The second event of the day will be a bombing contest for the Royal Palm Bombing Trophy, donated by the Royal Palm Hotel of Miami.

The contest is open to seaplanes and airships. No pilot may compete unless entry has been made prior to the day of the race. Each pilot is limited to one attempt consisting of three "bombs" which must be released during a single flight.

"Bombs must be painted white, and may be constructed of any substance which will sink immediately on striking the water without detonation—weight not to exceed 100 lb. The bombs shall be furnished by each pilot, who may win money that can purchase them.

The target will be withdrawn at a point to be indicated by the Contest Committee. The pilot who comes nearest to hitting a direct hit will be declared the winner. The airship will be awarded the planes placed second and third, in order of a gun, the distance to be selected in a match meeting by the Curtiss Committee.

Airships and seaplanes will be started in two groups. The starting signal will be given to each group of contestants at 30-second intervals. These will line up for start in the order of the receipt of entries.

The starting signal will be given during four passages over the target at an altitude of not less than 1000 ft.

Event No. 3, on March 8, is a Handicap Race open to N.A.C.A. seaplanes and flying boats. It will be exempted for

natty miles and even more. The Shenandoah held out the wind reached sixty-eight miles velocity, then the took the air easily like a ship slips her cable in a harbor and gets to sea to ride out bad weather. The demonstration of the ship's worthiness has been most striking, and the demonstration of the skill and ability of her officers and men is most impressive."

"From all our information, it may be asserted with positive certainty that there is hardly a possibility that this ship will encounter in her Arctic expeditions any test as severe as that she has already met successfully."

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the Flamingo Handicap Cup, donated by the Hotel Flamingo of Miami. The cup will become the permanent possession of the pilot of the winning plane.

These finishing rounds, third and fourth will receive silver rings.

The handicap for each seaplane or flying boat will be based on the basis of high speed credited to each class type. The distance and performance or acceptance test must be made with the Standard Handicap.

The plane must be equipped with standard radio and type motor and as performance or acceptance test, with turn, stroke and compression ratio must be used. Standard wing area and section must be used without structural changes. All other forms of streamlining are permitted.

The standard wing area of 100 sq. ft. will be used. Cup will be awarded to the pilot who comes nearest to hitting the target, pretreated motor, wing section and area are the same and no structural changes have been made. This shall apply to other racing planes which have a speed mark established in official races.

The race will be made over a distance of 200 km. (124.27 mi.), a eighth laps of a closed triangular course of 25 km.

The start will be made from "at rest" position with engine running. Starting line may be off center in shallow water, and will be designated by the Contest Committee. The seaplane or flying boat with the greatest handicap will start first and the fastest plane will start as "second". No inferior pilot shall be permitted after first plane receives starting flag.

Curtiss Marine Trophy Race

Then, the chief event of the Miami flying meet, is a race for all classes for high speed seaplanes over a triangular course of 25 km. (124.27 mi.) with a distance of 200 km. (124.27 mi.) and 200 km. (124.27 mi.)

Each team must have a factor of safety (wing stability) of six, as loadable for race, and have an air speed greater than 100 mph.

In addition to the trophy, the winner will receive a cash prize of \$10,000. Competition flying round and third will receive \$5000 and \$2500 respectively.

The start will be made from "at rest" position with engine running. The starting signal will be given to the

contests at 30 sec. intervals. Planes will have up for start in the order of the range of entries.

In these events competitors are forbidden to display at their plane any commercial advertisement except the trademark of the manufacturer, as per F.A.I. rules.

No plane may take part in the contests who does not possess the F.A.I. license or its equivalent issued by the Contest Committee of the National Aeromobile Association. (Planes may qualify not later than twenty-four hours before the race.)

The entry fee is \$50 for the Cotton Boll Weevil race, and \$80 for the Miami Chamber of Commerce Trophy race. The entry fee will be refunded if the contestants start in the contests. First entries received only will be accepted. The entry fee of all other contestants and entry fee will not be refunded.

There is no entry fee for the other two events.

Entries should be addressed to the Captain, Miami Contest Committee, via Chamber of Commerce, Miami, Fla. The entry blank is reproduced below.

ENTRY BLANK

Name of Contestant
Address
Name and type of airplane or Motor boat
Name and type of engine, including horsepower
Name and type of propeller
Name and type of oil used
Name and number of aircraft or boat
Name of pilot

Number and name of State, U.S. or Foreign
Name and address of manufacturer
Name and address of distributor
Name and address of dealer

Number and name of aircraft or boat
Name and address of manufacturer
Name and address of distributor
Name and address of dealer

Comments for contestants approved for publication use to any newspaper organization
Form No. 4-340

Success in Aerial Boll Weevil Campaign.

The Official Record, published by the U. S. Department of Agriculture, states in a recent issue that the damage of cotton from the boll weevil has given predictable returns in recent tests. Interestingly, a statement is noted in another issue of this publication to the effect that the cotton boll weevil is responsible for the greatest economic disturbance in the cotton industry in several years, that all but 600 per cent of the cotton crop now grows down south of the border, and that the boll weevil is the boll weevil, that tests carried out on more than 1,000 farms scattered throughout the Cotton Belt have shown that by proper fumigation of the fields with carbon arsenite 30 per cent of the fumigants were able to control the weevil as to make the crop possible.

When it is considered that cotton can be fumigated very much more effectively and经济地, in simplest form by any other method, than by the application of the arsenite, it is clear that in the cotton production of this country can be readily up-protected. The Official Record goes on to say:

"Attacking the boll weevil from the air has been proven a successful means of combating this most destructive enemy of the South's greatest crop, according to the Bureau of Entomology. Scores of different methods and materials have been devised and recommended for putting a stop to the devastating pest. The boll weevil can be controlled by the use of obtained arsenite arsenite in the form of dust is the most effective poison for the pest and a number of other cotton insects, and a specially equipped plane is the most effective means for applying it to the fields."

H. C. Cook, of the Bureau of Entomology, as charge of the department station at Tallahassee, Fla., spent the past week in Tallahassee, bringing to light many features of the work done in the past year. It was found that the various adjusted positions the dusted with carbon arsenite by aerial fumigation showed an increase of 750 lbs. per acre of seed cotton over fields not treated. Although the cost of fumigating with the use of the planes, which were supplied and manned by the Air Bureau of the United States Army, is not definitely known, it is estimated to be less than 50 cents per acre of cotton fields of cotton that were fumigated.

The tests being carried out by the department are designed to bring out information of many phases of the problem of

cotton insect control. During the summer the treatment covered 4,000 acres. On one plantation the fields were surrounded by buildings and trees, and on the other the fields were broken up by woods, burns and oceans. Both of the plantations were heavily infested with the boll weevil and the treatments were largely inflicted with the bell weevil and the cotton boll weevil. Applications of the poison dust were made whenever the conditions of the fields seemed to indicate the necessity for treatment.

During the experiments some important fundamental tests have been brought out concerning the application of dust. When dusting the plants to kill insects was first practiced on a large scale it was found necessary to do the work at night. It was believed that the insects would cause the dust particles to stick. It was also believed that the dust particles applied in the daytime would stick to the plants and that a pound of the material would go further than when applied by other means and when the leaves were damp.

Investigation has led entrepreneurs to believe that the best effect with the plane is gained because the particles of powder act like small ball point electrodes, while the wind causes a negative charge, due to the electrons being attracted to the dust setting toward the earth so that dust will be blown out with the wind and held above. The charge of electrons on the dust is thought to be produced by the friction of the wind on the dust and the wind carries dust particles with the air current, which has a speed of 100 to 120 mph. With this information regarding the charging of dust particles, department workers are now making efforts to produce more striking qualities in the dust applied by application so that all dusting work can be done in the daylight and the quality of the dust obtained with less material per acre. At the same time, studies are being made to determine whether high-frequency and high voltage generators can determine the dust to charge in this way instead of by friction when it is incident to the operations of the plane.

Greater concern in the use of the plane in fighting the boll weevil will come when a method is developed especially for the use of the plane, serving to dependent people. What is needed is to do an aerial survey of the field to be sprayed with a speed to avoid obstacles, and to obtain a constant speed, but with sufficient maneuverability such as loops, turns, turns, dives, sharp turns, etc. when the machine performed with extreme facility.

The test pilot, James M. E. Calender of Sioux City, Iowa, who has been flying for the U. S. Weather, Trop. and Agricultural Service at San Diego, Calif., has made over 1,000 flights over a short area, started in 1930, and equals over 1,000 miles of flight distance during which time he has secured maximum maneuverability such as loops, turns, turns, dives, sharp turns, etc. when the machine performed with extreme facility.

The pilot, in explaining the handling of the ship on these maneuvers, explained himself that it is the job of the pilot to keep the plane off the ground as much as possible, the only maneuver the machine is capable of, and with the dead control and side by side seating arrangement I feel that I could teach anyone to fly it in a few hours. It stands fine and is a good glider!

With full load it takes off in 15 ft. and lands in 150 ft. With engine running at 800 rpm horizontal flight may be obtained without losing altitude.

The Swanson-Freeman SS4 Two Seater



Swanson-Freeman model SS4 two-seater plane, equipped with an 80-hp LeRhône air-cooled rotary engine.

The Swanson-Freeman SS4, two-seater sailplane, was designed and built by E. Swanson and K. W. Freeman at Vermillion, S. D., and tested Nov. 12, 1933, with remarkable success.

The test pilot, James M. E. Calender of Sioux City, Iowa, who has been flying for the U. S. Weather, Trop. and Agricultural Service at San Diego, Calif., has made over 1,000 flights over a short area, started in 1930, and equals over 1,000 miles of flight distance during which time he has secured maximum maneuverability such as loops, turns, turns, dives, sharp turns, etc. when the machine performed with extreme facility.

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With full load it takes off in 15 ft. and lands in 150 ft. With engine running at 800 rpm horizontal flight may be obtained without losing altitude.

General Specifications

Dimensions	Wingspan, 39 ft. Length, both wings, 4 ft. Span, both wings, 4 ft. 7 in. Span, 10 ft. Span, 11 ft. 7 in. Span, 12 ft. 7 in.
Wings	Wing covering, U.S.A. 77 Total wing area, 100 sq. ft. Aspect ratio, 6.5; slant 2.0 Angle of incidence, 10°; dihedral, 0° Root camber, 1.5°; tip camber, 0.5° Root camber, 1.5°; tip camber, 0.5°
Fuselage	Front fuselage, 10 ft. 6 in. Rear fuselage, 11 ft. 6 in. Total fuselage, 22 ft. 0 in. Width, 4 ft. 6 in.
Tail	Horizontal stabilizer, 10 sq. ft. Vertical stabilizer, 10 sq. ft. Horizontal area, 11 ft. 6 in. Vertical area, 11 ft. 6 in. Total area, 22 ft. 0 in. Horizontal area, 11 ft. 6 in. Vertical area, 11 ft. 6 in. Total area, 22 ft. 0 in.
Weights	Empty weight, 600 lbs. Weight loaded, 900 lbs. Fuel capacity, 10 gal. Passenger load, 100 lbs. Passenger load, 100 lbs. Passenger load, 100 lbs.

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The wings are of the four-spar type, two main spars and two center spars, the bottom wing spar being used for the fuselage. The top wings are semi-circular in form. All the covering is of grade A fabric treated with five coats of acrylic dope and two coats of spar varnish. The rest of the leading edge from undercarriage, while the span arc of the round 10-ft. span section. The top cover surface has a camber over the cockpit.

The main wings are braced spruce framework and are of gull-wing proportion as are the angle bending wings and double flying wires all of which are 3/8-in. in cable. These wires are well out of the way of the surfaces to the cockpit.

Fuselage

The fuselage is of the gull-type body, body of spruce, the longitudinal being of ash forward of cockpit. The rear end of the fuselage tapers off to a horizontal wedge, the whole being mostly streamlined with lowered fairings. A three-laminate gun tail is located between the fuselage and covering just over the center of gravity. A tail gall is also provided.

Tail Plane

The horizontal stabilizer is adjustable from the cockpit and has two sets of six cables on the lower surface and two-thirds on the upper surface. High aspect ratio is also at all on the control surfaces.

The vertical fin is built into the fuselage and projects forward on either side of the fuselage. The tail shaft is of all steel and sprays by the usual rubber sheet absorber. All surfaces are of the semi-circular type resulting in a special hinge construction, which leaves a gap between the cover and the control.

All control levers are built into the various control surfaces, leaving an external linkage.

Controls

Steer stick and peddles have been installed. A magnetic switch is placed on the top of each control stick. The offense control cables run within the wings. The controls are light and answer principally to the various masses.

polar expedition with hydrogen, which is inflammable but can be used as to carry the ship fore and aft as far as between ports, there is no reason to predict that the proposed adventure will be a tremendous success.

It is the opinion of the Bureau of Navigation that upon the alleged reasons listed the Navy Department deserves to be blamed for the polar expedition, but deserved the scientific problems involved in relation to the Dardanelles disaster.

Nut Major Hazard

"The absence of helium was of huge importance in navigation, because helium is not only non-inflammable but also is needed for fire extinguishers," he said. "In time of war, if we had to defend ourselves against an enemy who uses overwater-petroleum tankers, fire is a major hazard and helium should be used if possible for inflation of all fabric囊s.

"But common sense dictates that no such conditions. In long voyages over oceans and unpopulated countries, the density level of air is so very scarce toward noon that the density of air at 10,000 feet would be too low for flight calculations. This is especially true of the Arctic flight, prepared for the express purpose of seeing an entirely unknown realm of gigantic proportions to yield an atmosphere and geographic secrets."

"A long-range aerial mapup of the safest and best routes for Arctic exploration, but it is folly to do this on any paper airplane. It is better to have a mapup of the Arctic prepared by aeronautical possibilities, but these solutions provide enough encouragement from the Shenandoah as long as the sea remains high in the air with her engines running smoothly."

Reserve Fuel Vital

"The supreme factor of safety will be the ability of the Shenandoah to ride out any emergency without becoming uncontrollable, and to return to port on board a plane to a populated country or more likely, this ability will rest almost wholly on the magnitude of the reserve fuel supply."

At the Dardanelles disaster, it is nothing, it teaches the lesson that when the Shenandoah venture beyond civilization, it should carry with it every pound of engine fuel possible. Equipped with hydrogen, the Shenandoah could carry twice as much engine fuel as it can carry when inflated with helium.

Furthermore, the fire caused to withstand—the only cause for helium—is vastly exaggerated. The Shenandoah is the only Zeppelin-type ship that has ever been inflated with helium during the lifetime of more than 100 Zeppelin-type airships, all but one always inflated with hydrogen, only two have been inflated with helium, and both of these were able to fly to the ground due to faulty structural design. The other caught fire from an unprepared, placed engine.

The history of aeronautics shows that the maximum fire hazard for the Shenandoah inflated with hydrogen on the polar trip would be merely twice as much as of one per cent.

"Therefore, as 7 per cent as heavy as air, pure helium is 14 times as heavy as air, or twice as heavy as hydrogen. As a matter of fact, pure helium cannot be inflated, and the kind of helium used now is 27 percent as heavy as air."

Hydrogen vs. Helium

"This means that the Shenandoah, inflated with hydrogen, can float in the air with a burden of 30 per cent less weight, and supplies will last longer, and cost less," continued Mr. McRae. "Hydrogen can be used as engine fuel in emergencies, but helium can not, being non-inflammable. A single and light explosive attached to the gas bags would mean that the Shenandoah, inflated with hydrogen, could add another 40 per cent to its fuel supply without impairing her buoyancy."

"We are satisfied with helium, the Shenandoah never carry a helio, and the aeronautics and other special experts not necessary if she were inflated with hydrogen. That means that with hydrogen she can carry another 20 per cent in fuel and supplies in place of this apparatus."

"The cost of these figures is 160 per cent, and that means that the Shenandoah is inflated with hydrogen instead of

helium for the polar expedition, she can carry twice as much fuel and supplies."

"It is apparent that the Dardanelles did not carry as much fuel as she either could or should. Only her officers can say why, but it is probable that she had been inflated with helium for the trip from Asia to Africa, she should not have carried as much as the actual weight."

"Furthermore, it is probable that the Dardanelles did not have the aeronautic attachments which would have enabled her to burn hydrogen from the gas bags when the gasoline ran out. That was a military act developed by the English during the World War, and the idea did not get lost. The Dardanelles was converted, and probably the French engineers in making the necessary modifications after they got her."

Lesson for U.S.

"If they had taken that position, the crossing stage of the Dardanelles would have been increased at least 30 per cent, undoubtedly sufficient to have saved the ship. That's one of the many reasons why the Dardanelles is not fit for transoceanic flights. This is especially true of the Arctic flight, prepared for the express purpose of seeing an entirely unknown realm of gigantic proportions to yield an atmosphere and geographic secrets."

"The Siberia is one of the most unfavorable places on the world for ballooning of all kinds, because marine and tropical winds violent disturbances due to rapid change of general temperature. If it should become necessary for the Shenandoah to shut off its engines, it would drift as a free balloon over the Arctic, where the temperature, the extremes of which are not known, force her down, whereas it would be lucky to last 36 hours without the engines over the Siberia."

"No provision to keep the Shenandoah's engine burning should be overlooked. And even if this engine should be stopped for some reason it is still the main important to have ample reserves of fuel or water fuel on board."

"30 gallons of this water fuel on the top of the Shenandoah would be enough fuel, will be one of the chief problems. The economy, of course, will be sufficient fuel to see as far as possible, enabling the engine to carry that extra burden along."

Italian Air News

"Work is in progress at the 'Stabilimento Costruzioni Aeronautiche' of Milan, the construction of a new type of dirigible, model of 40,000 cu. m., which it is claimed, will be the largest spherical dirigible in the world."

At the time of writing, no information is in her characteristics is available. We know, however, from a reliable source she will be a real survivor. Her range is estimated at least three thousand miles."

A new type of seaplane, known as "Baroni 82," is being prepared at Santa Cesarea. It has been designed by Ing. Mazzolini and is fitted with 300 h.p. Isotta Fraschini engine. It is anticipated that the Baroni 82 will be able to beat the world's seaplane speed record.

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"Therefore, as 7 per cent as heavy as air, pure helium is 14 times as heavy as air, or twice as heavy as hydrogen. As a matter of fact, pure helium cannot be inflated, and the kind of helium used now is 27 percent as heavy as air."

The meeting of Italian air and government authorities was recently held in Milan under the chairmanship of Gen. Giacomo, Lieutenant General of Aviation, to discuss the establishment of an air base between Italy and the State of Eritrea.

The base is to be operated by the Italian air corps, and the base and the port will be the property of the Italian government. The Italian air corps is to be equipped by means of a series of aeronautic bases on the Aden shore, and the camp carried. A permanent air corps of the machine will also be granted. To prepare the base, several experts will start on a mission to the Levant. The proposed line will at first be operated between Brindisi-Albania-Egypt and Constantinople. The possibility of extending it in due course to Alexandria and Cairo and points on the Red Sea has been considered.

"The cost of these figures is 160 per cent, and that means that the Shenandoah is inflated with hydrogen instead of

AIRPORTS AND AIRWAYS

Aeronautical Airways Reserve Operations

Concurrently with the arrival in Florida waters on Jan. 17 of the 11-passenger flying boat Helles and Niobe, an instrument was made of the sale of a mounting interest in the Aeromarine Airways to Harmon G. Coble and associates. The original organization was founded and a company formed known as the Aeromarine Airways Corporation of New Jersey. Coble has been established at 229 W. 41st Street. W. A. Badger, who is secretary of many of the corporations in which Mr. Coble is interested, will be president of Aeromarine.

With Helles and Niobe, Aeromarine will have its international flying boats based at Miami and Key West, and will conduct airmail services to the West Indies, between those points and Havana, Santiago and Cuba, in conjunction with the Florida Railroad and San Juan, and with the Cuban posts.

The Helles and Niobe are veterans in the flying service. Both have served 100 hr. in the air, or approximately 20,000 m., as a result. Last summer, they were employed on the Great Lakes, flying between Cleveland and Detroit. There arrived at Florida complete a 3000 cu. m. "Heavy" flight of 1000 cu. m. capacity, which is the largest ever built by St. Lawrence, Lake Champlain, and the Hudson River to New York, where the boats were completely overhauled at the plant of the Aeromarine Plane and Motor Co. in Kittery, Me. They then crossed the Atlantic coast. Ships were en route to Europe, and, as far as possible, to make room for airmail, the mail was sent by sea.

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Charles F. Badger, president of Aeromarine, declared that in the three and one-half years the firm has been operating in Florida, secured New York, and on the Great Lakes, its machines have flown upwards of 1,000,000 passenger miles and earned some \$20,000 paid passengers.

Badger, however, between Cleveland and Detroit," and Mr. Coble, who planes made 3000 flights, averaging over 1000 passengers, and 1000 miles each, and 1000 miles each, a flying, obviously, in the face of Congressional spending, we would endorse. That we have revised is attributable to the fact that support — so badly needed by aviation — is becoming tangiblely apparent. There is a public demand for air transportation, which may be realized through the development of the passenger flight line. It may be that the need exists for the first time in the history of aeronautics, either here or abroad. I believe, cooperation has been arranged with rail and marine interests. These considerations will go to assist the trade connections that are indispensable and will be the chief factor in the development of the airmail, I expect, that may take form. The Florida Railroad and Navigation Co. is an industrial and commercial development, tapping the Everglades and spreading north between Miami, Key West and Fort Myers on the one hand, Barnes G. Collier, a well-known negotiator and promoter, is interested.

"There is a number of considerable activities in the South. The flight from Miami to Miami via the Great Bahama banks is probably one of the most attractive air trips in the world. Much of the time the boats are over populated ways and due to the weather conditions of the winter months, the flights have been held, while at the same time a functioning program of the hospital ships is established. The trip is made by sky in two and one-half hours and by steamer in twenty hours."

The Helles and Niobe on their third South trip were in company with El. M. Muller, G. R. Rodden, Fred Land, R. C. Smith, manager of the Cleveland-based Aeromarine service last winter, will be the operating chief at Miami under Mr. Badger. As his two bases will have a corps of twelve air liaison mechanics and riggers. Mr. Badger will shortly leave for Miami to take charge of the service.

Kansas City News

By T. S. Jones

During the month of December, 1923, there was a total mail haul of 167 hr. 28 min. flying of Standard Field. Thirty-three flights were made by the Commanding Officer, Lt. Col. J. D. Campbell, for a total of 16 hr. 40 min., 10 flights by members of the 1st Observation Squadron, and 23 flights by members of the 2d Observation Squadron. Total flying time was 100 hrs. 40 min. for a total of 8 hr. 56 min., 201 flights by reserve pilots, officers of the Reserve Corps of Kansas City, for a total of 61 hr. 50 min., 106 flights for a total of 49 hr. 26 min., by Observers, Officers Reserve Corps.

With these 300-aero flights were made by Lieutenant General, Gen. John L. Smith, and Lt. Col. W. H. Clegg, flying to Bradfield, Fla., a distance from Kansas City of 207 miles, made on 3½ hr. with the help of a strong wind at his back. His return trip took four hr. He made this trip home in eight days to a family station at Christmas time, to which a brother by motor car, one sister on a train and one sister by pony cart. This is quite an record, we think, of a family vacation anyone could have by means of the means of transportation of the present day.

The Air Service Reserve Officers of Kansas City staged an aerial demonstration on Saturday afternoon, Dec. 29, 1923, at Richards Field, for 800 spectators, mostly supplies and officials of the city, to witness aerial activities. The show was a great success and will unquestionably end only by the year's end, but a big crowd will be along along to take care of the youngsters. There was a five mile run, aerial acrobatics and aerobatic demonstrations of all kinds.

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Orders to Officers

Lieut. Thomas P. Jones, detached Aircraft Squadrons Flying Fleet, to Bureau of Aeronautics. Orders 12-16-33 to Naval Air Station, Anacostia, D. C., enclosed.

Lieut. Herbert C. Ridd, detached Aircraft Squadrons Flying Fleet to Bureau of Engineering. Orders 13-33-23 received.

Lieut. Thomas O. W. Settle, detached Harvard University, U. S. Schools, Orders 13-23 modified.

Lieut. James H. Strong, detached Buoy, Navy Aircraft, Cleveland, to Aircraft Squadrons Battle Fleet, San Diego, Calif.

Lieut. (j.g.) William J. Madenjian, detached Naval Air Station, Pensacola, to Bureau of Engineering.

Lieut. (j.g.) Clyde W. Heath, detached Aircraft Squadrons Battle Fleet, to Aircraft Squadrons Flying Fleet.

Lieut. (j.g.) Herbert W. Taylor, detached U.S. Tarsus, to Naval Air Station Pensacola for duty duty pending further orders. Orders 12-22-33 revised.

Capt. Lure J. Larson, detached Buoy, Navy Aircraft, Chancery Flight Corp., to U. S. Schools.

New Type Navy Planes

A new plane heavier, made of molded fiber, is being placed on three planes being constructed for the Navy as a Known quantity to replace the H-3. These planes will stand up under tests and be adaptable to service by the time the war is free of war, as they could be turned out in large numbers at a very low cost, and moreover have an advantage in their lightness.

The first of three planes will be tested at the Naval Aircraft Factory at Philadelphia in the near future. They are planned to have a maximum weight of 1,000 pounds and a maximum speed of 60 mph. In order to fully determine the worth of the plane, flights when fitted under service conditions, two of the planes will be sent to Pensacola and one to Anacostia, for extensive trials.

Fight Orders for Enlisted Personnel

The Bureau of Navigation of the Navy Department has issued a series of flight orders pertaining to the enlisted personnel in the serioius organization of the Navy, which supercedes all previous editions. This includes covers flight training for song, aerial, ballooning, and seaplane, naval operations, naval gunnery, instruction involving flying, naval aviation pilots and special flight orders.

The issuance of flight orders is based on the different grades in pursuant to the requirements of the budget for the fiscal year 1933-1934. They will be issued according to the following percentages and must not be exceeded:

For grades 1, 56 per cent, pay grade 2, 28 per cent; pay grade 3, 16 per cent; pay grade 4, 16 per cent.

Aeronautical Information in Bowditch Revised

A revision of the chapters on winds and weather for the new 1935 edition of Bowditch, "American Practical Navigator," has just been completed by the Aerological Section of the Bureau of Aeronautics. The material appearing in former editions has been brought up to date and new chapters have been added.

The revision summarizes briefly modern methods of forecasting and radio-broadcasts of synoptic reports and forecasts.

Marine Balloons in Fleet Maneuvers

One hundred related men and sea officers sailed from the Marine Flying Field at Quantico, Va., on the U.S. Cruiser on Jan. 2, to join the Fleet for the winter maneuvers in southern waters. The force was commanded by Capt. Walter E. McLaughlin, U.S.N.C., and included a balloon division of one officer and 25 men.

Airshow Facilities at Hawaii

A booklet containing photographs and sketches of all the landing fields in the vicinity of Pearl Harbor is being made by the Tinapple Plant Division at the Naval Air Station at Pearl Harbor, T. H. The photographs for this booklet have been made from a DE2 plane equipped for photography, flying at 50,000 ft.



1934

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medical cures. You should be represented in WHERE TO

Fly and in CONSECUTIVE INSTRUCTIONS Book

Publisher's News Letter

One of the bright outlooks for aeronautical progress this year is the probable development of "light airplanes." The advances made already with these low-powered planes equipped with monoplane or other engines have opened up a field that may be one of the solutions to the problem of extending the use of aircraft with the public. Plans are being made for a competition that will offer incentive to builders of this type of airplane to present with their plans and instruct others to enter this attractive field. Nothing could be more helpful at this time when flying throughout the country is so largely confined to government aircraft and rebuilt war planes.

* * *

Perhaps too much stress has been placed on speed and distance that can be covered by airplanes. The motor boat and automobile both have their speed possibilities and can cover great distances, but their great popularity has been primarily due to the pleasurable sensations of traveling through the country or over the water. Their utilization uses have come later. In fact, it is only recently that the automobile has come to be recognized as a necessity, rather than a pleasure vehicle. In the same way the airplane may come into its own. If thousands of people could fly inexpensively and safely just for the joy of being in the air, with all the exhilarating accompaniments, there would be gradually developed that air fraternity that is so confidently expected by everyone. The small airplane with its low upkeep, in comparative safety and its slow speeds may quite rightly be given serious consideration as the possible means of popularizing flying.

* * *

The real need of aviation in the United States today is more frost. This in turn is dependent largely on two very essential points. First, the availability of airplanes at a low enough price to attract a large number of users, and second, a demonstrated method of profitably operating aircraft. With the latter the low-powered engine plane is directly concerned. Now that the simple war aircraft have largely been discontinued, and the demand for commercial airplanes does not permit of them being produced in quantity with resulting low prices, it may be that these small planes will develop a new group of users who will become the powers in the great growth of air travel. If, as the Duke of Sutherland, in speaking of English low-powered planes, predicted, these small craft can be produced to sell at about one thousand dollars, the days of a general utilization of airplanes is probably near.

* * *

The manufacturing problem in the construction of these small aircraft is very attractive. Almost any young man with a knowledge of airplane construction can, with suitable plans, build one of

In the aeronautical world the name Bassett has always been associated with balloons, Gliders with efficiency, Curtiss with seaplanes, and Polaris with speed. There is a great opportunity for a public spirited American to become the patron of the small airplane and so do as much to give a stimulus to commercial aviation such as some of the others have done.

* * *



Trade Mark

"For Human Locomotion"

In "The Outline of History," H. G. Wells writes that "by 1909 the aeroplane was available for human locomotion." It is an interesting coincidence that since 1909 exactly, The Glenn L. Martin Company has been building quality aircraft.

Without discounting the vital importance of airplanes in military and strictly governmental use, it seems certain that man's most useful ex-

ploitation of the air is destined to be as a medium for his own transportation in commerce and industry.

With this end in view, Martin Margins of Safety have not only been maintained since 1909 at an unusually high point, but are being steadily advanced today to new standards. Martin engineering practice is an ever-growing power for the improvement of human locomotion.

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